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The Cornell Countryman

CORNELL UNIVERSITY
COLLEGE OF AGRICULTURE
ITHACA, N. Y.

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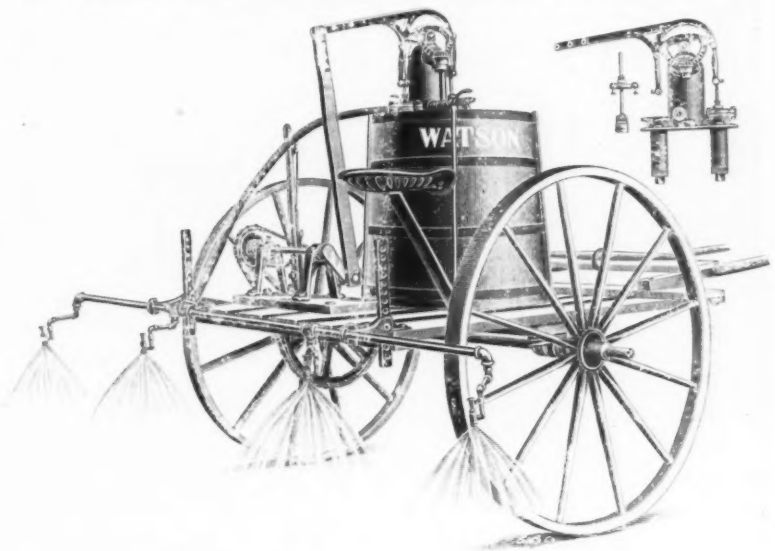
Wheels and Nozzles Adjustable for rows 2 1-2 to 3 feet apart



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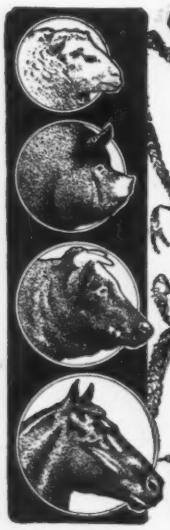

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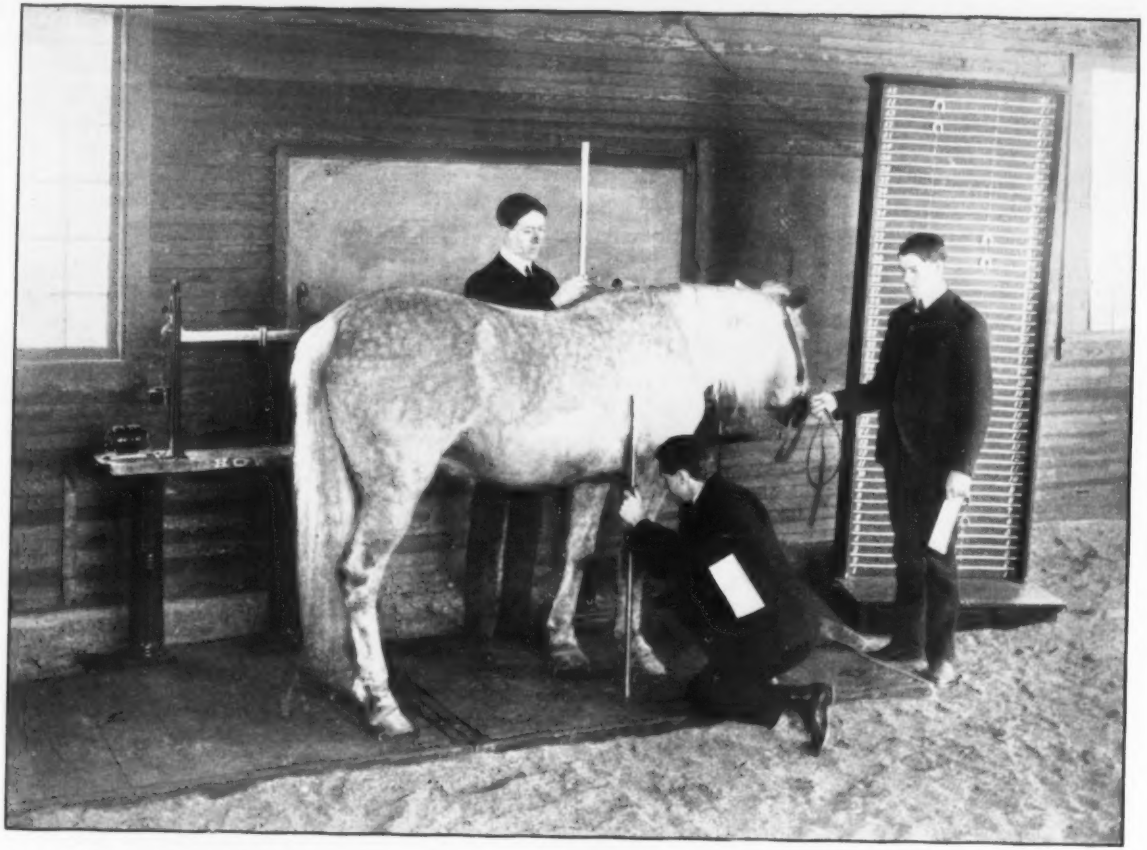


PHOTO BY MORGAN

STUDYING THE HORSE. CLASS IN ANIMAL MECHANICS, COLLEGE OF AGRICULTURE, CORNELL UNIVERSITY

THE CORNELL COUNTRYMAN

VOL. 2. APRIL, 1905 NO. 7

THE HORSE INDUSTRY IN NEW YORK

By Thomas F. Hunt

Professor of Agronomy, Cornell University

THE State of New York is a consumer of horses. New York State contains not far from one-tenth of the population of the United States and produces about one-fiftieth of the horses. The chart on the next page shows graphically the number of colts produced for each 100 horses kept in the United States, and the different divisions thereof, according to the Census of 1900, by taking the number of yearling colts as a basis for such calculation. It will be noted that in the United States for each 100 horses there are raised annually eight colts. This is the number required to meet the needs of the country plus the export. The total number of fresh horses required annually, therefore, is about 1,500,000. The North Atlantic States produce about 3.5 colts for each 100 horses, South Atlantic, 5.6; North Central States, 8.6; South Central, 5.7; and the Western States, 12.9, and New York State, 3.5 colts. The Western States include those states west of Denver. It is here that the breeding of horses is most active in proportion to the horses kept. In the United States there is raised one colt annually for about every four farms, in New York State one colt for every eight farms, and in Iowa one colt for every two farms.

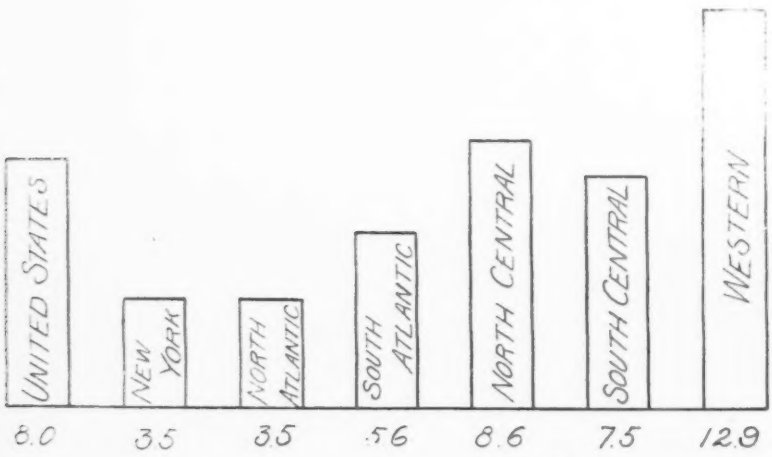
A similar relationship may be noted in passing, between the persons engaged in farm labor, and the number of horses kept upon the farms. There are more than twice as many horses in proportion to persons engaged in farm labor in Iowa as in New York State. This is not without its influence upon farm income and hence upon the value of farms.

The value of the horses in New York State probably equals, if it does not exceed, the total value of all other domestic animals within the State. The value of the horses upon the farms of New York State Jan. 1, 1905, was over 40 per cent of the total value of the horses, cattle, sheep, and swine upon New York State farms. It must be remembered that only about two-thirds of the horses of New York State are upon the farms, the others being employed in cities while comparatively few cattle, sheep and swine are kept within the cities. There are approximately a million horses in New York State at the present time, and it is probable that the state consumes annually from 50,000 to 75,000 horses worth from $5,000,000 to $8,000,000 more than she produces. Buffalo is said to have handled 40,000 horses in 1904, although this is probably an over estimate. These horses come principally from the North Central States, including especially Iowa, Ohio, Illinois, Nebraska, Kansas and the Dakotas. New York State stands fourth among the states in the value of farm horses, being exceeded only by Illinois, Iowa and Ohio. It is exceeded in numbers by several states. When we include the horses in the cities it is probable that New York State stands at least second, if not first, in the total value of horses among the states.

The fact that the State of New York is a consumer rather than a producer of horses has led to the development of agencies for taking care of this large trade. A single horse frequently passes through a number of hands in its way from an Ohio or Michigan farm to the final consumer in

one of our large cities. If a draft horse, it may be purchased by a local horse buyer in the adjoining town who in turn sells it to a dealer who ships it to some one who makes a business of fattening draft horses, much as steers are fattened. When ready for the market, this horse may be purchased by a shipper who sends it to the Buffalo or New York market, where it is sold on commission, either at private treaty or at public auction. Here it may fall directly into the hands of the consumer, or it may be purchased by a dealer who takes it to a smaller town to sell, either directly or through a local dealer. It is needless to say that every man through whose hands this horse passes expects to receive some compensation for his labor and other expenses. In the case of coach and carriage horses and drivers, many are purchased in the large markets in their green state by trainers who have establishments in different parts of the state, who fit them and educate them for customers requiring high class horses.

The largest sale stable in the state is Fiss, Doerr & Carroll Horse Company., East 24th Street, New York City, said to be the largest dealer in horses in the world. Here public auctions are held every Monday and Thursday throughout the year. At East Buffalo there are two large sales stables—the Crandall Horse Co., affiliated with the last named firm, and the Hickok, Aldrich Co. The former conducts an auction every Monday morning, and the latter every Monday afternoon throughout the year. These three establishments receive all classes of horses consigned to them on commission, but their sales comprise chiefly draft horses, chunks, common work horses, and uneducated horses of the lighter type. One of the Buffalo firms, which handled 17,000 horses last year, writes me that approximately 15 per cent weighed more than 1,500 pounds, 15 per cent weighed



NUMBER OF COLTS PRODUCED PER 100 HORSES

less than 1200 pounds, leaving 70 per cent between 1200 and 1500 pounds. It is safe to say, therefore, that at least three-fourths of these horses possessed more or less draft breeding. The American Horse Exchange, 50th St. and Broadway, of which W. K. Vanderbilt is president, makes a speciality of selling carriage, coach and riding horses as well as holding special sales for breeders and dealers in high class horses. The Fasig-Tipton Co. conducts special sales at the Madison Square Garden, where the best standard bred horses are consigned for sale and where the highest prices for horse flesh are obtained. This company holds the Old Glory sale during the two weeks just following the National Horse Show and the Mid Winter sale of the "400" the first week in February. In addition it conducts the Blue Ribbon sale at Cleveland, Ohio, and the Down East auction at Boston, both in May.

The rules adopted for the auction sales are much the same with all these large commission firms. In a general way it may be said that a horse may be sold at auction under one of five different conditions: (1), title only is guaranteed; (2), horse is guaranteed to be a worker only; (3), horse is guaranteed to be sound as to wind and to be a worker; (4), horse is guaranteed serviceably sound; (5), horse is guaranteed sound. Every horse thus sold must be in all respects as guaranteed, but the purchaser must examine and try the animal within the required time specified, usually on the day of the sale. All kinds of vehicles and appliances are usually on hand to show horses according to the uses for which they are intended. These sales are conducted very rapidly, sixty to seventy horses per hour being sold. Not all horses, however, are sold at public auction. Many are sold at private treaty. One has to pay a slight advance in price at private sale, but it gives a wider range of selection

WHITE RIVER MORGAN
Owned by L. D. Ely, Rochester, N. Y.
See page 128

and a better opportunity to select wisely.

While this is a state of horse dealers rather than breeders, occasionally a breeding establishment may be found. The most noted of these breeding establishments was the famous Village Farm, East Aurora, N. Y., founded by C. J. Hamlin, whose death occurred February 20th, about two weeks after his horses had been dispersed at the Mid Winter sale, Madison Square Garden. This breeding farm, founded nearly half a century ago, with definite objects in view, became the "greatest trotting nursery in the world." "From its paddocks," it is said, "have come more trotting and pacing champions than from any other farm in existence, and more 2:10 horses and more 2:15 horses than from any other farm that ever existed." As an illustration of the success of this breeding establishment, six trotters, viz: the Abbott, 2:03 3-4; Lord Derby, 2:05 3-4; the Monk, 2:05 3-4; Phantasy, 2:06; Nightingale, 2:08; Daredevil, 2:09,—have won an aggregate of more than $200,000. Three were sired by Chimes and three by Membrino King.

It is suggested that the mantle of Hamlin may fall upon R. H. Murray, at Canastota, N. Y. Whether this is true or not the home of Medio is a successful breeding establishment, from which a considerable number of high class horses are sent out each year. Honorable F. C. Stevens, Attica, N. Y., is well known as a breeder as well as importer of hackney horses. His horses are known in every show yard. In this state also are a couple of well known establishments for the breeding of ponies, C. Howard Davidson breeding Welsh ponies at Millbrook, N. Y., while E. F. Hawley, Pittsford, is equally successful with Shetland ponies. Among the breeders of Morgan horses may be mentioned Bayside Farm, Rochester, N. Y., owned by L. D. Ely. It is here that White River Morgan is kept, one of the most highly bred of living Morgan stallions.

Very few horses of the draft type are bred in New York State, most of them being of trotting blood, frequently of the Morgan type. It would be interesting to trace, if it were possible, the influences which have led the New York farmer to stick largely to the Morgan type of horse. It would be interesting to know whether this was due to the fact that the Morgan horse became esablished in New York State before the introduction of draft horses into the United States, which occurred about fifty years ago, or whether the environment is more suited to this smaller horse. The breeding of draft horses began in Central Ohio and has gradually moved westward until the whole of the Central West has become permeated with horses of draft breeding. During the half century that has elapsed the draft horse has appeared unable to make its way eastward to any considerable extent except to be consumed. Whatever may be the reason, one thing is certain that the phenomenal development of the Central West has been in large measure related to the application of efficient motive power to the production and marketing of farm crops. The draft horse has been a factor in this development. The efficiency of the horse as a motive power has been raised to such an extent as to reduce the number of horses required to do a given amount of work.

COURTESY OF HORTICULTURAL DEPARTMENT, CORNELL UNIV.

SETTING CABBAGE—A PLANTER AT WORK IN THE FIELD

COMMERCIAL CABBAGE CULTURE

By Fred E. Gott

IT was not until within the last quarter century that cabbage growing obtained much prominence as a commercial industry in the State of New York, except in the market gardens in the vicinity of the large cities. Since 1880 the development of this industry has made rapid strides. And, now, in the middle of the first decade of the twentieth century we find this important vegetable taking its regular place in the common rotation followed on market farms wherever soil and climatic conditions are favorable. We find also that Michigan, Wisconsin and several other states are now growing large quantities of this crop, so much so, as to materially influence the supply and market. It is a crop that usually pays the farmer well for the time and attention given to its cultivation, but like all other good things may be overdone. As the wide variations of prices in different seasons conclusively show—a very high price for the crop of any one season stimulates an immense planting the succeeding year to the extent of over-production, consequently low prices and inadequate returns—but the farmer who will be content with a small or moderate acreage, and who will apply the very best cultural methods to the same, is the one who will obtain the most satisfactory results.

Great care should be taken in obtaining only the very best seed, and this is not always an easy thing to do. There is a constant tendency in this plant to revert back to its original type—a stump with a few scattering leaves—of use only to perpetuate its kind, but not to form a head. In the purchase of seed we must take into consideration, also, the fact of an inherent trait of human nature which, if not thoroughly subordinated by moral rectitude may lead to such acts as filling the middle of a barrel with cider apples, or the mixing of good

seed with an inferior article to increase bulk.

As very few growers will care to spend the time and care necessary to grow their own seed, I will simply advise early purchase, if possible from a dealer with whom you are acquainted and who has a reputation to sustain. Then in a short, heart to heart talk tell, or write him exactly what you want and expect, and if he has it, pay him all he asks. No doubt he will have seed which he could sell you for less money but it will be dearer in the end. Get one pound for each four acres to be set. Some growers advise sifting the seed using only the largest. My own experiments along this line do not prove the value of the operation.

The utmost pains should be taken in the preparation of the seed bed, the soil of which should not be too heavy. Else the aid of a pick-axe and crowbar may be required when you pull the plants. It should be a rather light loam, well drained, naturally rich, but no manure should be applied or the plants might be induced to make too succulent growth; such plants do not bear the shock of transplanting as well as those that are more stocky and tough. If the plot intended for plants is not considered rich enough naturally, it should have been manured the previous season and some other crop grown upon it.

Much more essential than manure is the thorough and complete preparation and cultivation of the seed bed. Fit it as perfectly as for onions, so that no lumps larger than a pea will remain unpulverized to the depth of six inches, and this means a whole lot of labor with cultivator, roller, harrows and float. And do not neglect to remove all stones which might interfere in any way with thorough work. The object should be to give the young plants the most congenial conditions for strong growth and the development of as perfect root system as possible. While the tender roots of the young plant will find their way between the particles of a well prepared soil in their search for plant food, they are not of sufficient strength to drill their entrance into solid lumps of hard soil to obtain the food which is locked up therein, hence can only fasten themselves to the surface of such lumps, and when we pull them we wonder why they have not grown better. The seed is sown about six weeks prior to the time when the plants are to be set, which, in our latitude, is about the fifteenth of May, in drills twelve to fourteen inches apart and not over one-half inch in depth. They may be sown by hand, but much more rapidly and easier with any good garden drill, preferably when the soil is neither too wet or too dry. If the soil is rather dry and does not contain too much clay, it will be well to go over the piece after sowing and press the earth solidly around the seed with the ball of the foot. In heavier soil the roller of the seed drill will be sufficient for the purpose. In either case a rake or weeder should be lightly used within a day or two after seeding to prevent the formation of a crust over the seeds which would tend to prevent their breaking through to the surface.

As soon as the rows of growing plants can be seen the cultivation should begin, first with the rake, then, as they grow larger so that the danger of covering the young plants is avoided, with the wheel hoe and cultivator. No weeds should be permitted to grow either in the rows or between them. The plants should not be compelled to struggle for existence against rank growing weeds, and the soil mulch should be carefully preserved. Much stronger plants will result by thinning to one inch apart. And it will pay well to take time to do this when the plants are from one and one-half to two inches high. It is not advisable to use the same plot for growing plants continuously each year on account of insect and fungus diseases.

Aside from the heaviest clays and the lightest sand almost any soil under proper methods of cultivation will grow profitable crops of cabbage. Too much stress cannot be laid upon

the importance of thorough and intelligent cultivation and handling of the soil, for more depends upon the condition of the soil than upon its character, and many inferior soils under the best methods of tillage give greater returns than do the very best soils under careless or indifferent management. One should fully understand the nature and character of his soil, and a knowledge of its particular cultural requirements is imperative. Most of our soils contain latent plant food in abundance, and the efforts of the husbandman should be directed towards the rendering available that which he is already possessed of rather than to place dependence upon costly purchased fertility.

COURTESY OF HORTICULTURAL DEPARTMENT, CORNELL UNIV.
HARVESTING CABBAGE—A LOAD READY FOR MARKET

The clover sod, containing as it does large quantities of humus, nitrogen and other plant food in the decaying roots of this legume, undoubtedly furnishes the best conditions attainable for this crop. Stable manure composed of both the solid and liquid portions of the excrement of all the farm animals and poultry, thoroughly mixed so as to be of uniform strength and value, in moderate quantities, should be hauled immediately from the stables, each day if possible, and spread upon the field. My practice is to use the droppings and soiled bedding from the horse stables as litter for fattening cattle, this being much dryer than the droppings from the cattle, is an excellent absorbent. Then the poultry droppings well mixed with ground rock or gypsum is spread evenly over the manure in the stables and thus a uniform mixture is obtained, and when the weather is not too severe is drawn to the field each day, not more than twelve or fifteen two-horse loads per acre being spread as evenly as possible on the land. Treated in this way the loss of its essential elements is reduced to a minimum. Going over the field with a smoothing harrow or weeder in the spring prior to plowing will disintegrate any lumps of manure that might remain and improve the distribution of the same.

As early as possible but not until the soil has become sufficiently dry to crumble from the mold board, the

field should be plowed. And here, more than in any other operation, depends the success or failure in growing a remunerative crop. Each furrow should be absolutely straight, and an equal width of cut from one end of the field to the other, and all portions of sod turned out of sight. To do this, a good plow, in perfect order, with a jointer, and all properly adjusted, and a team and driver who know their business will be required. Remember the field must be thoroughly fitted before the plants are set. No amount of subsequent cultivation will atone for careless and defective preparation. The furrows should not be turned bottom upwards, but at an angle so that the sod and the dressing of manure will be distributed through the plowed soil and not all at the bottom of the furrow, where, in a dry season, it would be likely to destroy the capillary connection between the tilled surface and the subsoil. I have seen the failure of crops for an entire season follow the plowing under of a heavy growth of rye or clover in the manner indicated, whereas if the furrows had been set up at an angle there would have been nothing between the lower edge of the furrow and the subsoil to interfere with a complete establishment of capillarity.

The roller and the harrow should follow the plow each day, never allowing the furrow to become glazed. When this advice is followed the perfect fitting up of the soil can be readily accomplished. Thorough pulverization and compacting of the soil is imperative. This is done with the spring tooth and Acme harrow, the roller (used with judgment) and lastly a home made plank float.

Commercial fertilizers can often be used at a profit and should be drilled broadcast just prior to setting the plants and before the finishing touches with the Acme and float. The best results are obtained when the plants are set just before a rain rather than just after. Unfortunately we are not always wise enough to determine accurately just when the rain will come. The distance apart for setting varies somewhat with different varieties. The larger domestic kinds should be three feet each away, while winter varieties like the Danish Ball Head will do very well set in rows three feet apart and twenty-six to twenty-eight inches in the rows, which will give 6700 to 6200 plants per acre.

Long top roots and excessive growth of leaves should be removed at time of transplanting and much pains taken to have the soil well packed about the roots. When these precautions are observed and strong, well grown plants are used, very few will be lost, but the field should be looked over within a few days and all missing plants replaced. We wish every plant to form a marketable head, and leave no waste places. In a few days the plants will have recovered from the shock of transplanting, and cultivation should at once begin. This should be deep and thorough at first but shallow during the remainder of the season and should be continued as long as it is possible to get through between the rows. A crust on the surface of the soil between the rows should never be permitted to exist. To prevent this often necessitates the use of the cultivator once a week or even oftener, and the latter cultivations are best performed with quite narrow teeth. In every wet season deeper cultivation, even late in the season, often becomes necessary in order to restore the best conditions for soil activity. Subsequent applications of commercial fertilizer, during the growing season, are often advantageous, not necessarily to the whole field, but to portions upon which the growth of the plants has been arrested for any cause or where the plants show a lack of vigor or an unhealthy color. In such cases I have found an application of nitrate of soda to be of great benefit. Care should be taken to apply to the soil around the plant and not to the plant itself. Nitrate of soda is readily available as plant food and the results of its ap-

plication in the cases mentioned is often wonderfully prompt.

In harvesting care should be taken to avoid bruising the heads particularly if they are to be stored. A bruise is about as fatal to the keeping quality of a cabbage as it is to an apple. An important question which must be determined by the grower himself is whether it is best to sell immediately from the field, or to hold his product for an increased price.

A head of cabbage will never be any heavier than when it is first cut, and we sell them by weight. The shrinkage of stored stock is often tremendous. In order ever to derive the advantage of the high prices which are sometimes obtained late in the season, one must have a purposely constructed store house—a portion of the basement where farm animals are kept will not do. It is seldom profitable to store with the expectation of selling "just after the holidays." That is the time when the large dealers unload their storehouses as a rule. The market is then well supplied and the farmer with his two tons, or a carload, perhaps, is not in the merry-go-round for an instant. If he stores at all he should be able to hold his crop until late in the season if necessary, and to do this he must have a building in which the temperature can be perfectly controlled. It should not vary much in either direction from 33 degrees F. More cabbages are lost by the temperature of the storehouse being too high above the freezing point than below it. Perfect ventilation must be provided for as well as protection from sudden cold spells. The bins should be so constructed that the contents of each one can be inspected at any time and, if necessary, be removed without disturbing the adjoining bins. To sum up, such a building, constructed with a view to obtaining only the best results, is an expensive affair.

Diseases and insect enemies are hard to combat. The application of generous quantities of lime to the seed bed is recommended as a preventive of club-root. I believe this to be effective in most cases. But we must remember that this disease is peculiar not only to the cabbage but to other members of the cabbage family, as well as certain weeds. And where a soil once becomes badly infected it is better to discontinue the crop. In fact, it is better not to use the same land in succession for any plants or crop.

A well limed seed bed is not a happy hunting ground for the cabbage maggot, but I doubt if it will entirely prevent his depredations. This maggot and the aphis are most serious pests. The latter is a sucking insect and is accordingly combated with emulsions. As most of its time is spent on the under surface of the leaves which even curl around it, thus affording it complete protection, not much can be accomplished owing to the difficulty of bringing the emulsion into direct contact with its body. Tobacco dust is also recommended for this pest.

Fortunately such visitations as we had in 1903 are rare. Whenever this pest appears in small numbers the infested plants should be destroyed by burning and the same disposition should be made of plants infected with club-root. The cabbage is of great value as food for live stock or poultry.

THE SPIRIT OF THE "SHORT HORN"

By H. H. Herriman

IT has been said that the Short Course students of Cornell receive more practical instruction during the few weeks that they are here than do the students of any other course in the same length of time. I believe the "Short Horns," to a man, will agree to that. Study to work might be our watchword.

But this is not all that we are doing—we must have a little play, a respite. So, instead of rough-housing so much, we spend our energies in another direction. The General Ag.'s and Dairy classes form themselves into clubs. The Fletcher Club, called so after our popular professor, and the Dairy Club. The poultry students affiliated with the regular poultry class.

The Fletcher Club holds its meetings weekly in Barnes Hall amid the many trophies won by the University. Each meeting is said to be better than the previous one. It is certain that all have been greatly enjoyed and well attended, far more than half the members coming. The one effort made by the entertainment committee was to have from time to time as many members as possible take part in the talks and discussions of the club. And it has been a surprise, a wonder, and a delight to the professors and club members to learn that there was such good material and such a quantity of it among them, and to find all this in such a short time. Remember, the course is but eleven weeks long, and the club naturally congratulates itself in bringing to light such a wealth of talent. The short talks have all been exceptionally good: a five minute's talk on some familiar farm subject. The debates have given not only much pleasure and amusement, but considerable information on the subjects treated. And, of course, these debates were on matters relating to agricultural life.

There was an exciting and well fought debate between the Dairy and Fletcher Clubs and aside from the consideration above stated, the meeting of the two organizations brought about a better understanding, and a feeling that we are all of one class. Although the Dairy Club team lost, the Club had an enjoyable evening, and we became much better acquainted. The two sets of boys do not know each other as well as they should, and all are sorry we have not met oftener.

But there is always more entertainment in store, in the form of stunts and music by the members, and the orchestra and the quartette. Every one is enthused with the idea of helping in any way that he can of doing his share, to advance the enjoyable times. It is a splendid thing to have sufficient musical talent in a class whose members come from all parts of the country. And a treat this talent is every time. Necessarily, this means many rehearsals, but the time is cheerfully given and the results amply repay.

There is another part willingly given by all, the club dues or tax. This money is used to pay for the lights of our room in Barnes Hall, and to furnish the refreshments. At each meeting there is served a different kind, nothing great, but it adds to the social time. During the meeting, some of the glorious Cornell songs are sung, the boys especially liking "Jingle Bells," that rollicking, swinging song! The evening ends with our yell too, and given with plenty of vim:

"Cornell, we yell,
We work, we strive,
Fletcher Club, Fletcher Club,
1905."

In the early part of our term, a reception was tendered by the Ladies of the Nature Study Course, the Faculty and the Regular Ag.'s, the

ladies having entire charge under the supervision of Miss McCloskey. We had a very pleasant evening. It was given for the new men to become acquainted, and to learn the Cornell songs and yell, to imbue Cornell spirit. March 14 a reception was given in return by the Short Ag.'s to those who so kindly welcomed us when we came. A goodly number was present, and they enjoyed the stunts, hits and music given. There were ten numbers on the programme and praise was unstinted for each one.

The boys did finely, but only what was expected of them. Yells were given as each professor was hit off. The refreshments were partaken of with much gusto and, after singing the Cornell songs, we adjourned, feeling that the short-horn reception had been a success.

"FARM LABOR THE WORLD OVER"

Facts from the Report of the Industrial Commission, 1901

THE UNITED STATES

THE average rate of wages of farm laborers according to investigations carried on appears to have nearly doubled in fifty years, and is now fully as high as at any period in 20 years and higher than in any other country in the world. The efficiency of the more skilled and reliable class is found to be increasing from the influence of agricultural education, in the object lessons presented by the thousands of graduates and students of colleges and dairy schools, the teaching of farmers' institutes, and the agricultural press. The influence of the general use of farm machinery in the same direction is very apparent; it also tends to ameliorate the drudgery of farm labor, and shorten the hours of service.

The common labor of the farms, including the transient service in harvest or other operations and the less intelligent of the foreign elements, does not appear to be improving in efficiency. It is less reliable and valuable than the native farm labor of a generation ago.

The difference in wages between the districts in which white and colored labor predominate is wide. In regard to efficiency, colored labor is, as a whole, standing still or retrograding. Although such is the case, some testimony is adduced showing improvement in efficiency of a small class of colored laborers in certain sections. Colored labor seems to be superabundant, listless and unambitious, lacking inducement to effort. On the other hand, it is shown that many of these colored laborers go from Virginia to Rhode Island and Connecticut, get $18 to $25 per month and board, give good satisfaction to their employers and return south in the winter. They are probably above the average in reliability and efficiency, and it is certain that at home they could not command more than half the wages they receive in the North.

As a result of the investigation the conclusion is reached that our farm laborers, with apparently lower wages than persons of the same intelligence and skill receive in town-employment, save more money, have more comforts, and fewer amieties, and have better opportunities to secure homes and social position. Many instances are cited, and they are by no means rare, of laborers who have gone to the towns, spent their little savings, and after years of struggle have returned to the country to recoup themselves. In addition to wages it is the rule for married labor in the country to have a house free of rent, have a garden, fire wood, pasturage for a cow and other prerequisites. In many cases the enterprising laborer becomes a tenant and afterwards a farm owner. —*J. H. Barron, '06.*

The Cornell Countryman

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APRIL, 1905

The Latest About Soil Fertility

Professor Whitney, Chief of the Bureau of Soils at Washington, visited the University early in March. While here he very kindly consented to speak before the members of the Seminar in Advanced Agronomy and gave them a genuine treat by telling them of the recent developments in the soil fertility problem. His argument in brief was as follows.

It is known that plants grow better in fertile than in infertile soils. Professor Whitney found that solutions from soils of both classes contained practically the same amounts of plant food. The answer to the question at first was thought to lie in the movement of soil moisture. It was thought that perhaps the physical condition of the soil had a controlling influence on the accessability of the soil moisture to the plant roots. If this were true the difficulty would be overcome by growing the plants in soil solutions. The plants that were grown in soil solutions, however, acted the same as when grown in the soils from which these solutions were derived. The question was yet unsolved.

Among the factors involved in the problem he mentioned two in particular; first, it is the tendency of all substances to assume the most insoluble form when brought into solution; and second, one cannot take out of solution the last traces of soluble substances, and in dealing with plant growth one is dealing with these infinitely small quantities which are beyond ordinary methods of chemical determination.

Then Professor Whitney took a concrete example, the soil in Takoma Park, Washington. This was the soil of his own lawn and he had tasked himself to the utmost in trying to get grass to grow on it but had failed. Application after application of manure, amounting in all to fifty tons per acre, had been made with seemingly no results. Neither was the color of the soil changed as might be expected nor did the grass grow any better. All the manure he applied seemed to vanish and disappear. In his despair he applied fresh ground leaves. He went into the forest, plucked the leaves from the different trees and ground them in a sausage grinder. Applications of these different leaves were made on different portions of the soil. Certain results were obtained. The sumach leaves turned the soil dark and gave it a rich color. Chestnut and oak did this slightly. He tried the growth of plants in soil treated with sumach leaves. The transpiration by the plants and likewise their growth in this soil was approximately 100 per cent greater than in case of the plants on the untreated soil. Now, what has produced the effect? Was it the application of the humus of those leaves, was it merely the effect of the coloring matter contained in the sumach leaves, for we know that the leaves furnish us a dye, or was it the reducing power of the sumach?

The thought occurred to him that the result might be due to the effects of a reducing agent. He added lime, a comparatively large quantity too, and the same effect was produced, i. e., the transpiration and growth of the plants was increased approximately 100 per cent. He also tried pyrogallol, a powerful organic reducing agent, the same as is used in photography with the same effect. Soil solutions were made from the original soil possessing the same infertile qualities of the soil. He added these agents to the soil solution producing the same effects as did the application of the same agents to the original soil. Now, to make the case general he tried these agents on different kinds of infertile soils and their solutions with the same effect. Hence he concludes that the infertility of the soil was not due to the lack of plant food. Moreover, the cause of the infertility of the soil is transferred to the solution and is a property of soil solutions rather than of the solid mineral matter of the soil.

Then he made a soil solution of both a fertile and infertile soil. In the solution from the fertile soil the plants grew well; in the solution from the infertile soil they did not grow well. He poured a portion of the infertile solution into the fertile and this addition made the fertile solution infertile, although there was, of course, no less plant food.

Now he goes a step further. We know that when the colored solution from the barn yard is passed through charcoal or carbon black the color is removed, no matter how much the solution may be colored. The same effect is produced by ferric hydrate. Professor Whitney then made infertile soil solutions and added carbon black, and also (to different portions) the ferric hydrate. The result was a fertile solution. Lest it might be argued that these compounds produced a stimulating effect on the roots of the plants through mechanical irritation, he added the carbon black to the solution and then filtered. The result again was a fertile solution.

During the progress of this inquiry, it was found that in the early stages of germination, the rootlet first excretes a chemical substance and afterwards reabsorbs it. The same kind of seeds saturated with a one per cent solution of this substance would not germinate.

Now he makes up a new solution of plant food, containing chemically pure mineral compounds of known composition, and then places wheat seedlings in it. At the end of six days the solution became discolored and the seedlings ceased to grow. The seedlings transferred to a fresh solution grew for six days and then ceased to grow. Other seedlings immersed in this solution would not grow. Now, this solution in which the seedlings had grown six days and then ceased to grow, and in which other seedlings would not grow, was treated with carbon black; other portions with ferric hydrate and filtered. Into this solution seedlings were immersed and again they grew six days and then ceased to grow. It is clear, thought the speaker, that the retarded growth of the seedlings was not due to the lack of plant food but to the toxic effects of the compounds excreted by the plants themselves.

What the College Boys are Doing

The February issue of the *Countryman* published an article entitled "Enlarging Our Sphere of Influence." The article was written by Scott

Perky and described a movement which the Alpha Zeta Fraternity had undertaken, but which had failed of results. In this article he states that a year or two will pass perhaps, before a similar work will be started. We are glad to see that this work has again been taken up. The movement once more originated in the fraternity, but is spreading to include every student in the College of Agriculture. An executive committee has the work in charge. This committee has created two other committees, one on programs, the other on arrangements.

The object of the movement is to hold meetings about the county which shall be conducted conjointly by the students and farmers. In this way the students hope to come in closer touch with the practical farmer. The students have the theory perhaps, but they lack experience and practice. They are willing to share their theory with the farmer and hope to secure in turn some fragments from the farmer's valuable store of experience. Although they may be graduates of the Agricultural College, the students keenly feel their lack of experience. By holding meetings with the farmers, they hope to be of some help to them from the side of theory, and to receive help from them along the lines of practical experience. It is hoped that the movement may also awaken a deeper interest in the work of the college among the farm homes of the state.

GENERAL AGRICULTURAL NEWS

In articles in the *Deutsche Landwirtchaftliche Presse* A. Kirsche discusses his experiments in breeding *Oats* in such a way that the crops can be increased by heavy manuring without the necessary adjunct of lodging. His conclusions are summed up in these sentences:

1. In breeding for solidity of stem the main points to consider are the lowest internodes, as here the greatest weight is carried.

2. The weight of the stem does not give a certain basis, upon which to calculate the carrying capacity of the stem. However, usually, if the lowest internode has a great carrying capacity, this is also great in the others.

3. Though we should aim for shortness of the lowest internode, a plant with this character should only be used for breeding purposes if the stem at the same time possesses great carrying capacity.

A Unique System of Lighting

The government laboratory buildings in the Philippines is nearly completed and fitted up in the most scientific and up-to-date manner. Something entirely new is used in the way of light supply for the administration building. As Asiatic coal is not very well adapted to the production of illuminating gas, and European or American coal would be too expensive, some ingenious mind has turned to cocoanut oil as a gas generator. For this purpose strong cast iron retorts are brought to a red heat and cocoanut oil is slowly admitted to them. In the process a high grade illuminating gas is generated. This gas is free from all smoke and refuse.—*Der Tropenplanzer.*

* * *

The total exports of Denmark during 1903 were somewhat less than $100,000,000. Of this the Agricultural Co-operative Societies exported $57,070,000 or over 57 per cent. of the total exports of the country. Certainly co-operation in agriculturul lines has reached a high level in that industrious nation.

W. H. Ogilvie, of Kelso, Scotland, who has recently been appointed editor of the station publications, will also have charge of a course in agricultural journalism in the college. The latter course is established through the liberality of John Clay of Chicago, who, realizing the great importance of suitable training of college students in the field of agricultural journalism, has contributed liberally to Mr. Ogilvie's salary. This is believed to be the first department of agricultural journalism that has been established in that country or elsewhere.—*Experiment Station Record.*

* * *

Some Points of Interest Regarding the National Dairymen's Association of New Zealand Lt.

"The National Dairy Association is of great value to producers. In addition to the ordinary work which falls to such bodies, it acts as general agent for members. Contracts for regular service of steamships to London at fixed rates of freight are arranged and consignments of produce received for storage and shipment. It also undertakes the supervision of all shipments of dairy produce, the freezing of butter for export, the collection of rebates, concessions or return primages on weights and distribution of same to producers. Sales of dairy produce are made, and fire, marine and accident insurances effected for members at lowest rates. Information in connection with the various markets is supplied, and reliable factory managers and assistants are engaged.

The annual subscription for persons or companies ranges from $1 to $8 according to output. This charge covers all work done on behalf of the members, with the exception of the one per cent commission charged for buying goods or selling produce.

Says Secretary Harkness of the Association: 'New Zealanders are thorough believers in the system of government control of the dairy industry, and above all of grading, branding and instruction.'"—*Extracts from The Sydney Mail.*

The Agricultural Schools of Austria

In the year 1904 there existed in Austria 184 agricultural and forestry schools. Of these are:

2 of university grade,
3 agricultural academies,
9 agricultural secondary schools,
5 forestry institutes,
1 institute for the brewing industry,
2 institutes for fruit, wine and horticulture,
39 agricultural schools of a lower grade with full year's instruction,
71 agricultural winter schools,
9 forestry schools of a lower grade,
15 dairy and domestic science schools,
24 lower grade specialized schools for fruit, wine, garden, hop and bee culture,
2 brewing schools,
2 distillery schools.

Of these 184 institutions seven are maintained by the national and 60 by the provincial governments, 5 by the counties, 103 by agricultural societies, 9 by private parties. Instruction was given in the year 1904 by a permanent teaching force of 601 instructors with 794 assistant teachers. The attendance on registration day was 7148 students, of which 5235 or 73 per cent were farmers' sons.

These schools are situated in 17 provinces of the Empire and instruction is given in eight different languages—namely: German, Bohemian, Polish, Slovenian, Italian, Servo-Kroation, Ruthenian and Roumanian, of which Bohemian and German lead.

It must be born in mind that these figures are for Austria only and do not include Hungary, Bosnia and Herzegovina, Croatia and Slavonia. In other words, of the total of 240,942 square miles contained in the Austria-Hungarian monarchy these figures cover only 92,649 square miles with a population of 22,702,891 people. In extent the territory, the agricultural interest of which are discussed here, equals nearly the combined territory of the states of New York and Pennsylvania with about twice the population of these states.

CORNELL NEWS

CAMPUS NOTES

The Short Course Dairy Students are very fortunate in having the privilege of hearing a fine series of non-resident lecturers. Some of the lecturers and their topics are: Dr. Harding, Bacteriologist at the Geneva Experiment Station, "The Changes which take place in the Making and Curing of Cheese;" Mr. Smith of the same institution, "Relation of Factory to Patron;" Mr. H. E. Cook of Denmark, "Possibility of Factory Management;" Hon. Geo. L. Flanders, Assistant Commissioner of Agriculture, "State Agricultural Law;" Mr. Henry Mattison, State Butter Instructor, "Creamery Patrons."

* * *

Prof. Stone is preparing a bulletin on Potato Culture which will be ready for distribution about April.

* * *

Mr. C. A. Rogers, of the Graduate Department of Horticulture, has accepted a position with the Vick Seed Firm at Rochester.

* * *

The Department of Horticulture has received an application for a man to take charge of the plant breeding grounds of a prominent seed firm in New York.

* * *

The Short Course Students have the right Cornell spirit. On March 2d there occurred in Barnes Hall a debate between the General Agricultural Students and the Dairy Students. The subject was, Resolved, that Poultry Farming is More Profitable than Dairy Farming. The sides consisted of three men, the General Agriculture students supporting the affirmative. The judges were Dr. Fletcher, Prof. Rice and Mr. Trueman. The affirmative won.

* * *

F. E. Bailey, one of our special students, has just recovered from a five weeks' siege of scarlet fever. We are pleased to see him up and among us again.

* * *

Sixteen members of the class in Poultry Husbandry have visited the following places on an excursion during the past month: Chas. A. Cypher Incubator Co., Buffalo, N. Y.; Cypher's Incubator Co., Niagara Falls, N. Y.; Curtis Bros. Wyandotte-Pekin Duck Farm, Ransomville, N. Y. Later 25 members visited the Geneva State Experiment Station, Geneva, N. Y.; Gardner & Dunning Barred Plymouth Rock Plant, Auburn, N. Y.; D. M. Osborn & Co. Farm Implement Mfg. Auburn, N. Y., and C. H. Wyckoff's White Leghorn Farm, Aurora, N. Y.

* * *

Our college is receiving visits from many representatives of industries throughout the state. Mr. Bert Olney of Oneida and Mr. Owens of Turren, proprietors of canning factories, spent two days here in the early part of March, investigating problems of their business with special reference to agriculture.

* * *

The Department of Horticulture has completed arrangements with the Seed Division of the Plant Industry Department at Washington, whereby an extensive co-operative study of the garden beans will be carried on this coming summer at the University.

* * *

The Dairy Department is receiving daily calls for men to take charge of and to work in Cheese Factories. This speaks extremely well for the efficiency of our Department.

* * *

The Farmers' Institute held Feb. 27th, 28th and March 1st at Elmira was very successful in its purpose. There was a very large attendance, the hall was not large enough to hold all

that wished to attend. All were very enthusiastic as evinced by the numerous questions with which the speakers were plied. Our faculty was well represented by Dean Bailey who spoke on "Does Farming Pay?" Prof. Rice on "Poultry;" and Prof. Hunt on "Beef Cattle." Such efforts are worthy of the co-operation of our faculty and the various agricultural institutions and associations of the state.

* * *

The Union Carbide Co. of Chicago has donated two tons of carbide to the Horticultural Department for the furtherance of the acetylene experiments which are now taking place.

* * *

A number of our agricultural faculty attended the State Farmers' Institute Annual Banquet at Utica on March 7.

* * *

Hon. Mr. Downing, Commissioner of Education of the State of New York, addressed the Agricultural students March 3rd on the question of introducing elementary agriculture into the public schools.

* * *

Mrs. Henry Parsons of New York City, noted for her school garden work among the poor children there, recently delivered a very interesting lecture before the University.

* * *

We notice with pleasure the appearance of a new book from Orange Judd & Co. entitled *"The Potato"* by Samuel Fraser, Assistant Agronomist at Cornell University. The book is well edited, comprising a full up-to-date treatise of the subject. It comes from one who has made a careful study of the literature of the potato and is familiar with the best methods of its culture at Cornell. The book is well written and reflects much credit upon the author.

Professor Slingerland gave a two hour lecture course on insect pests of farm, orchard and garden, and remedies for them, to the winter course students.

* * *

Under state appropriation there has been sustained at the College of Agriculture, Cornell University, a free Reading-Course for Farmers' Wives on subjects pertaining to home life. A particular feature of the course this year will be the establishment of clubs among rural women for the study of the printed bulletins. These may be in connection with the grange, or in clubs organized especially for this study.

The course covers three years and is divided into the following series:

I. The farm-house and garden.

II. The farm family.

III. Sanitation and food.

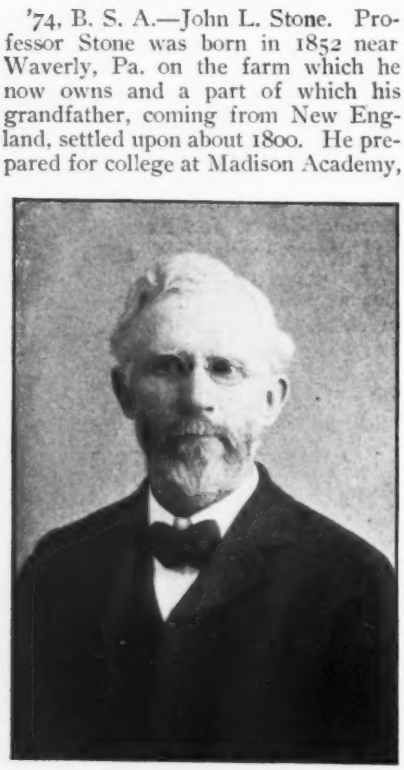
Membership in the course is free in the state of New York, and is secured by sending the name and address to the Farmers' Wives' Reading Course, Cornell University, Ithaca, N. Y.

* * *

A prominent vineyardist in Chautauqua County writes Professor Slingerland that his recent Bulletin No. 224 on Two Grape Pests "is certainly a very valuable and important Bulletin to the Chautauqua vineyardist. It must have been extremely gratifying to you to be able to certify so positively and unqualifiedly to the complete and splendid success of your efforts to subdue the most deadly enemy our vineyards have yet known, namely, the root-worm. I was very happy to be able to write as positively as I did regarding last season's spraying, but I could not with any regard for truth express myself with less assurance. Your victory is certainly magnificent. The menace of destruction has vanished. We have under your lead, met the enemy and they are ours. I am resetting my vineyards with all confidence of absolute protection from the root-worm."

FORMER STUDENTS

'74, B. S. A.—John L. Stone. Professor Stone was born in 1852 near Waverly, Pa. on the farm which he now owns and a part of which his grandfather, coming from New England, settled upon about 1800. He prepared for college at Madison Academy,



JOHN L. STONE, '74

Waverly, Pa. Later he entered the Agricultural Course at Cornell and graduated with the class of '74, thus being a member of the second class graduated from the Agricultural Department. After graduation Mr. Stone returned to the home farm and took up practical agriculture. In 1876 he was married to Jennie D. Parker of Clark's Green, Pa. They have four children, all girls.

He became interested in livestock and in 1884 visited England and Holland making an importation of Shropshire sheep and Holstein Friesian cattle. In connection with some neighboring farmers he organized the Lackawanna Breeders' Association and became its secretary-treasurer. He was president of the Lackawanna County Agricultural Society, a member of the Pennsylvania State Board of Agriculture and for several years worked on the Farmers' Institute staff. In 1897 he left the farm to engage in the Extension Work of the College of Agriculture, in which work Professor Stone has been eminently successful and through which he has probably come to know as many farmers in New York State as any other agricultural worker. In 1903 he was made assistant professor of Agronomy which position he still holds.

'95, B. S. A.—After graduating, Rufus H. Pettit was appointed assistant state entomologist of Minnesota. He then went to Ingham, Mich., where he became connected with the Michigan Agricultural College and Experiment Station as assistant entomologist. At the end of two years he was advanced to the position of entomologist, which position he has held for the last six years.

'95 B. S. A.-'96 M. S. A.—G. Harold Powell was horticulturalist in the Delaware College Experiment Station from 1896 to 1901. Since then he has been in the Bureau of Plant Industry at Washington, where he is now pomologist in charge of fruit storage investigation. This work is intended to determine the principles which influence the keeping qualities of fruit in warehouses and their carrying qualities in transit. It has been extended throughout the apple, pear, and peach belts east of the Mississippi River, and into the orange and lemon growing regions of southern California.

'95, M. S. A.—Immediately after graduating, S. H. T. Hayes worked in the chemical laboratory, and later had charge of milk testing in the dairy course at Cornell. Afterwards, he was for one year in the Boston laboratory of the Walker-Gordon Co. He then became manager of the Baltimore laboratory of the same company, at 421 North Charles Street. This laboratory is one of the eighteen similar establishments that the Walker-Gordon company have in the United States, Canada and England.

'95 Special.—Carroll C. Clevenger has a 460-acre farm in the Shenandoah valley at Stephenson, Va. Seventy-five acres of the farm are planted to a peach orchard, from which twenty-eight car-loads of peaches were shipped during the past season. Clevenger "believes that young men make a mistake in leaving the farm to take up salaried positions in the cities. There is just as much money, and far more genuine independence and health on the farm."

'96, M. S. A., '90, B. S.—After graduating in 1890 L. C. Corbett acted as assistant horticulturalist at Cornell University until 1893; was professor of horticulture and forestry at South Dakota Agriculutral College from 1893 to 1895; was professor of horticulture and forestry at the University of West Virginia from 1895 to 1901; has been horticulturalist of the U. S. Dept. of Agriculture from 1901 until the present time. He has also revised the horticultural parts of the International Cyclopedia and of the Century Dictionary. Professor Corbett was at Cornell University January 8th and 9th, 1904, to address the annual session of the Agricultural Experimenters' League of New York.

'96, B. S. A.—Glenn W. Herrick has been teaching entomology, zoology and botany at Agricultural College, Miss., for nearly eight years. Part of his work is indicated by the heading of the letter, "Boll Weevil Quarantine. Glenn W. Herrick, Entomologist." In referring to his duties he says, "it has been good, hard, glorious work."

'96, B. S. A.—Chas. W. Mudge, who graduated with special mention in chemistry, was assistant instructor in chemistry at the University of Maine in the winter and spring of 1897. After that, he worked with Assistant Professor Cavanaugh of this college on the large number of sugar beet analyses made at that time. Later he became assistant chemist for the Binghamton Beet Sugar Company. In March, 1899, he received an appointment to the department of chemistry at the state experiment station at Geneva, which position he still holds.

'96, Special.—John C. Percy entered Stevens Institute at Hoboken, N. J., in the fall of 1896, graduating with the degree of Mechanical Engineer in 1900. He has acted as foreman and superintendent of blast furnaces at Wheeling, W. Va., and at Pueblo, Colo., and at present he is chief engineer of the pumping department of the Wm. B. Schaife & Sons Co., Pittsburg, Pa.

'98, Graduate.—H. C. Irish is superintendent of the Missouri Botannical Gardens at St. Louis. He was at Cornell as a special student in 1896 and later, in 1898, was registered for a master's degree in agriculture. Mr. Irish is making a special study of the different varieties of North American peaches.

'02, Winter.—Walker S. Dickinson thinks it is a splendid plan for the agricultural men of Cornell today to keep in touch with one another. During the past year he, his father and a younger brother have been running three farms at Groton, N. Y. These together with their large dairy afford him abundant opportunity to put into practice the ideas gained in his course at Cornell. He was unable to meet with the class in 1902 at the State Fair, but says if they try to meet again he will be present to see all his classmates and renew old acquaintances.

Ex.-'03.—E. L. Caldwell left us in 1902, and is now in business with E. H. Caldwell, general hardware dealer of Corpus Cristi, Texas. Great development is expected to follow the completion of two railroads through that part of the country, connecting with Brownsville on the Rio Grande. After returning from a trip down the valley of the Rio Grande, Caldwell writes us that that land is the finest in the world. but cannot be cultivated without irrigation from the river. The rest of the country is also too dry to cultivate, but on most of it irrigation from artesian wells is practicable. Caldwell

hopes some day to see a number of Cornell men interested in he development of his part of the country.

'03, Winter.—D. G. Crowell, in partnership with his brother, is conducting a fruit and dairy farm at Wallhill, N. Y. The partnership goes by the name of "Crowell Bros." and has been very successful. Crowell Bros. won a silver medal on a collection of apples, at the St. Louis Exposition, and also received first premium on fruit at different county fairs last fall. Mr. Crowell found the course in 1903 of such practical value that he thought it worth while to come again this winter.

'03, Winter.—J. R. Bodurtha has moved from Burlington Vt., to Springfield, N. J., where he has charge of a large dairy farm.

'04, Winter.—John M. Lewis is on the home farm at Alfred Station, N. Y.

'05, M. S. A.—Walter Strickland Thornber was born near Rantoul, Champaign County, Illinois. He moved with his parents to Iroquois, South Dakota, in the spring of 1883. In 1893 he entered the South Dakota Agricultural College and soon after was made student assistant in the Horticultural Department. He graduated in 1897 and was given full charge of the Horticultural Department for one year during the absence of the head of the Department in Europe and Asia. Afterwards he was made assistant in Horticulture and Botany, which position he has held until the present time. He took his Master's degree at the South Dakota Agricultural College in 1899, doing considerable advanced work in Cornell University.

In August, 1904, he was granted leave of absence for one year and came at once to Cornell to take an advanced degree here, which degree he expects to get next June.

Last month he accepted the position of Horticulturist in the Agricul-

WALTER STRICKLAND THORNBER, '05

tural College of the State of Washington. This college ranks well among the colleges of the country and the high regard in which it holds the gradnates of Cornell reflects high credit upon the Horticultural Department here. In the last four years two other Cornell men have held the same position. From 1900-02 it was held by Prof. S. W. Fletcher; in 1903-04 by Prof. N. O. Booth, and now the Horticultural Department of Cornell sends another man in the person of Mr. Thornber. The *Cornell Countryman* heartily congratulates Mr. Thornber on his new appointment.

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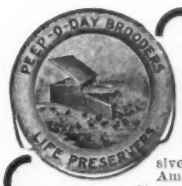

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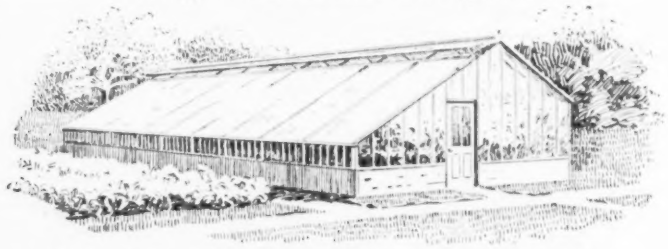

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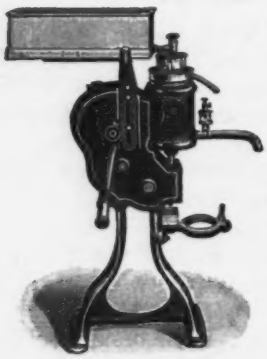

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